TITLE: USE OF SALMON DERIVED NUTRIENTS BY THE AQUATIC COMMUNITY OF A LARGE, REGULATED RIVER

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The importance of spawning salmon to the productivity of the streams they inhabit and ultimately the production of their progeny has been well documented. However, there has been little research on the importance of salmon derived nutrients (SDN) in highly altered, regulated streams. This study examined the response of the aquatic community and food web to the seasonal abundance of spawning Chinook salmon (*Oncorhynchus tshawytscha*) in the Feather River, a regulated river in California's Central Valley. We compared the temporal variability in nutrient concentration, periphyton density, benthic macroinvertebrate density, as well as the $\delta^{13}C$ and $\delta^{15}N$ level of stream producers and consumers prior to carcass presence, when carcasses were present, and after carcasses were no longer present. Due to a unique regulation regime and salmon spawning distribution, we were also able to evaluate the affect of carcass loading on stream water chemistry, benthic biota, and assimilation of SDN by comparing responses in a reach with a high density of spawning and low, stable discharge to a reach with lower density of spawning and higher, variable discharge. Concentration of nitrate plus nitrite, periphyton density, invertebrate density, and $\delta^{15}N$ level of periphyton and most consumers increased when carcasses were present, suggesting spawning salmon provided an important nutrient subsidy. We also found significantly higher nitrate plus nitrite and $\delta^{15}N$ level for invertebrates with higher carcass load, but failed to find significant increases in periphyton and invertebrate density. Our results show that dams and their associated discharge regimes can affect the availability of SDN and ultimately the productivity of the downstream aquatic community.